3RP-066

GW monitoring report

DATE:
2004

BURLINGTON
RESOURCES
San Juan Division

March 31, 2005

RECEIVED

Certified: 70993400001842167364

RECEIVED
APR 06 2005
Oil Conservation Division
Environmental Bureau

RECEIVED
APR 06 2005
Oil Conservation Division
Environmental Bureau

Glen Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: 2004 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico

Dear Mr. von Gonten:

As required in Burlington Resources approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2004 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

3RP 66	Cozzens B#1
3RP 69	Hampton #4M
3RP 71	Johnson Federal #4 Metering Station
3RP 173	Flora Vista (ENTERPRISE FIELD SVCS — FLORANCE VISTA #1
3RP 37	Marcotte Pool Unit #1 ~~(BLM)~~ 30-045-29466
	Sategna #2 (30-045-07974)

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,

Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Johnson Fed. #4,)
Facility and Correspondence Files

3RP 66

BURLINGTON RESOURCES 2004 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at a shallow depth (i.e., 3 feet) at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, BR has been unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000 through 2004 ACTIVITIES

Quarterly groundwater monitoring continued through 2004. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

The ground water regime being monitored at this location appears to be artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch may be contributing water to the subsurface strata and artificially creating a shallow perched ground water zone. This perched zone may be the source of the ground water being monitored at the location. The irrigation ditch is flowing approximately April 15 through October 15 annually. Without the ditch influence there may not be any shallow groundwater beneath the location and none is expected upgradient of the ditch at these shallow depths. A project to clay line the ditch to prevent water seepage was started March 2001. The clay lining included the reach of the ditch upgradient from the production location and was performed by local residents. The residential properties are located down

stream from the location and were concerned about water structural damage to near by residential properties from the ditch. The ground water gradient is approximated to be in a west/southwest direction. The influence of the ditch water on MW-1 and MW-2 can be observed in the water level measurements collected and coincides with the water flow schedule of the ditch. An apparent lag in hydraulic conductivity between the ditch and the monitoring wells is assumed to be three months or more.

The analytical results of ground water sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Ground Water Standards. Since the initial sampling event in May 1999, six quarterly sampling events have shown all BTEX constituents below the standards in MW-1. However, sampling results for 2001 show elevated levels of BTEX. The effect of a minor condensate spill on 1/30/01 of approximately 1 bbl coupled with the soil being previously disturbed during the historic excavation activities may be responsible for the recent increase in the levels of BTEX in MW-1. The impacted soils were removed after the 1/30/01 spill. Further monitoring may determine if the recent elevated concentrations are related to a minor slug of contamination. No evidence of a change in the groundwater regime from the ditch lining project was observed in MW-1 and it is possible the lining project did not impact the ditch reach adjacent and upgradient of the location. One detection of benzene identified in the second quarter of 2003 from MW-1 was determined to be questionable. No additional analysis results in subsequent or historic monitoring detected similar elevated concentrations therefore the result is considered not valid.

The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. A trend of natural degradation of the hydrocarbons and of a downward trend in BTEX levels appears possible in well MW-2. Insufficient water prevented the collection of data from this well in 2001. In 2002 a downward trend in benzene and total BTEX concentration was established in the monitoring data. The concentration reported for MW-1 show a decrease in benzene. The concentrations reported for MW-2 show a decrease in benzene and total BTEX.

2004

One full year of sampling and analysis show no concentrations above the standards.

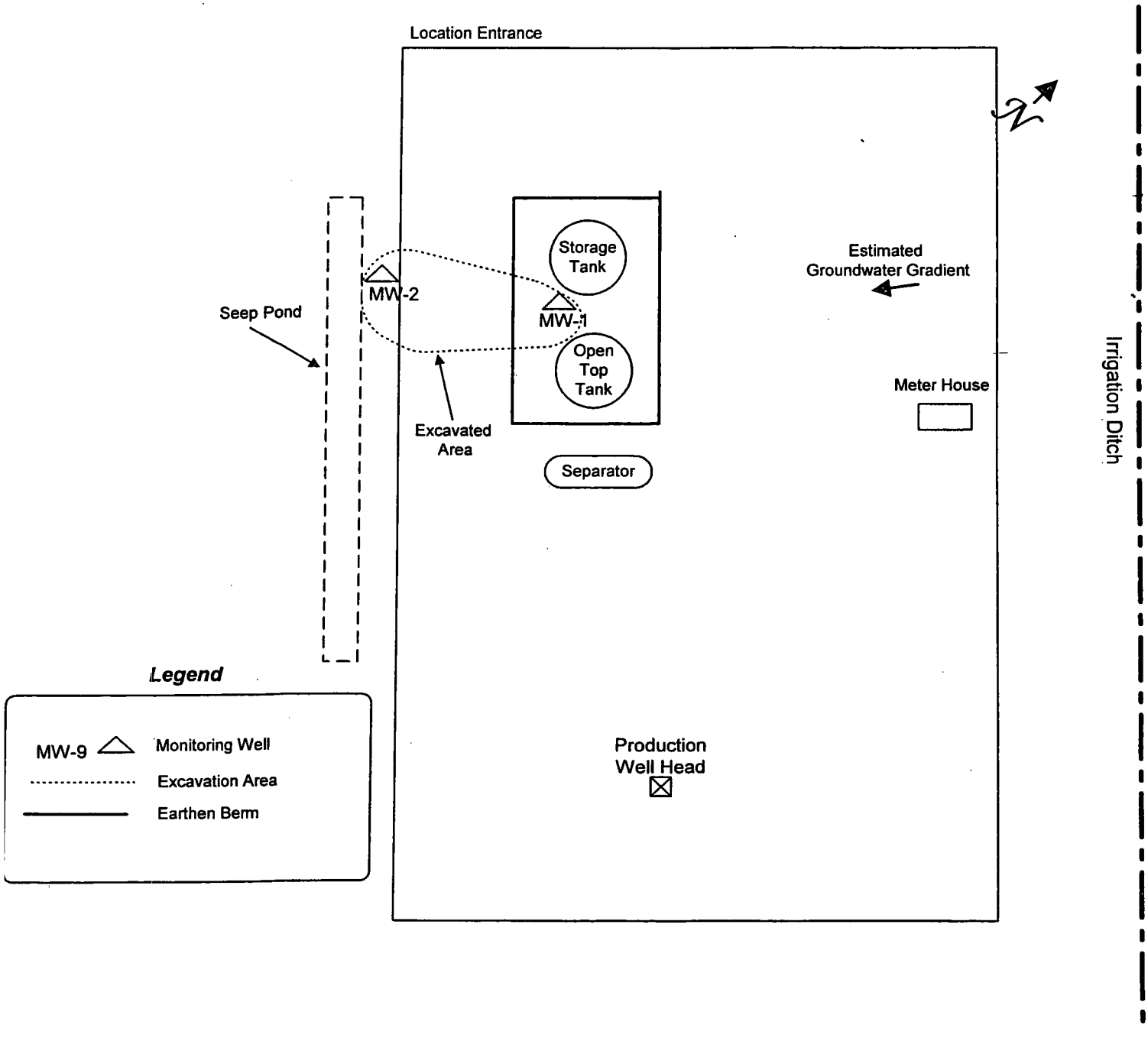
RECOMMENDATIONS

- Burlington Resources proposes to stop quarterly sampling at this site based on the analytical results being below standards for one full year.
- Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2003Groundwater Analytical Results
Drilling Logs/Wellbore Diagrams
Philip Report on Excavation Work

Figure 1

Cozzens B#1 - Site Diagram



3/28/00 LEH

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
			10	*750*	*750*	*620*		
Cozzens B #1	MW-1	5/26/1999	**28**	11	23	99	161	
	(aka MW-4)	9/2/1999	2.5	2.1	5.6	22	32.2	2.31
		12/2/1999	<0.5	11	5	27	43	4.43
		1/19/2000	1.7	13	7.6	28	50.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
		3/28/2001	**50.3**	<0.2	1.3	3.6	55.2	lost
		6/28/2001	**4170**	<0.2	220	370	4760	5.26
		9/17/2001	**12.9**	<0.2	0.5	4.3	17.7	3.51
		12/19/2001	**39.6**	3.1	6.3	14.1	63.1	4.64
		3/27/2002	**50.8**	4.5	5.9	21.1	82.3	7.81
		6/25/2002	6	3.1	0.5	8.4	18	3.8
		9/25/2002	0.8	0.6	0.5	0.6	2.5	3.05
		12/30/2002	5.6	10.6	7.7	8.3	32.2	5.7
		3/28/2003	9	16.9	13.5	26.3	65.7	7.42
		6/27/2003	1.8	11.6	6	15.6	35	4.29
		9/23/2003	0.5	6.9	2.6	8.2	18.2	4.94
		12/16/2003	6	25	15	51	97	5.84
		3/15/2004	9J	U	4J	40	53	7.92
		6/21/2004	U	U	U	20	20	
		9/29/2004	U	4J	U	5	9	3.15
		12/13/2004	U	U	10.2	30.9	41.1	5.6
	MW-2	5/26/1999	Well was dry.		No Sample.			
	(aka MW-5)	9/2/1999	**120**	55	440	450	1065	1.28
		12/2/1999	**250**	39	480	**980**	1749	4.35
		1/19/2000	Well was dry.		No Sampl		0	
		5/11/2000	**550**	140	**830**	**2400**	3920	3.53
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36
		12/15/2000	**65**	4	25	59	153	3.63
		3/28/2001		no sample collected				Dry
		6/28/2001		no sample collected				Dry
		9/17/2001		no sample collected				3.74
		12/19/2001	**31.8**	3	18.9	29.9	83.6	3.87
		3/27/2002	no sample collected Dry					
		6/25/2002	**22.3**	6.5	7.4	9.5	45.7	3.8
		9/25/2002	1.8	2.4	1.2	30.1	35.5	3.7
		12/30/2002	No sample collected				0	Dry
		3/28/2003	No sample collected Dry					
		6/27/2003	48.8	54	48.6	148.2	299.6	3.95
		9/23/2003	0.7	14.9	1.7	5.1	22.4	4.01
		12/16/2003	0.9	10.3	3.3	6.9	21.4	4.12
		3/15/2004	no sample collected Dry					dry
		6/21/2004	U	0.3J	U	0.7	1	4.2
		9/29/2004	0.3J	14.9	4.2	21	40.4	3.34
		12/13/2004	0.7J	U	3.8	10.6	15.1	3.95

2004 GROUNDWATER ANALYTICAL RESULTS

WELL DEVELOPMENT AND SAMPLING LOG

Project No.:_____ Project Name: Cozzens Client: Burlington
Location: Well No: MW-1 Development **Sampling**
Project Manager MJN Date 3/15/04 Start Time 1550 Weather clear 40s
Depth to Water 7.92 Depth to Product na Product Thickness: na Measuring Point TOC
Water Column Height 6.93 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer Double Check Valv☐Bailer Stainless-Steel Kemr☐rer

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other or bail dry

Gal/ft x ft of water	Water Volume in Well		Gal/**oz** to be removed
	Gallons	Ounces	
6.93 x 0.16	1.13		3.39

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal)	Comments/ Flow rate
1550	**9.16**	**2210**	**55.4**				**0.25**	**Clear Heavy Hydrocarbon odor**
	8.78	**2140**	**52.2**				**0.50**	
	9.21	**2080**	**51.8**				**0.75**	
1602	**8.14**	**2010**	**51.1**				**1.0**	
	8.22	**1990**	**51.0**				**2.0**	
1606	**7.6**	**2040**	**51.7**				**3.0**	

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
1609	**7.55**	**1910**	**52.0**					**4.0**	**clear**

COMMENTS: Pump depleting well

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-1 Sample Time 1613
BTEX VOCs
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

WELL DEVELOPMENT AND SAMPLING LOG

Project No.:300031.0 Project Name: Cozzens Client: Burlington Resources
Location: Cozzens Well No: MW-2 Development **Sampling**
Project Manager MJN Date 3/15/04 Start Time 1500 Weather sunny 40s
Depth to Water na Depth to Product na Product Thickness na Measuring Point TOC
Water Column Height ba Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer **x** Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other_____

Gal/ft x ft of water	Water Volume in Well		**Gal**/oz to be removed
	Gallons	Ounces	
na	na		na

Time (military)	pH (su)	SC (umhos/cm)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (oz)	Comments/ Flow rate

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate

COMMENTS: There was no water in the well.

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID _____na_____ Sample Time na
BTEX VOCs Alkalinity TDS Cations Anions Nitrate Nitrite Ammonia TKN NMWQCC Metals
Total Phosphorus
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L 44981 and 3/18/04
L 44968

CHAIN of CUSTODY

Report to:

Name: Gregg Wurtz	Address: 3401 30th St
Company: Burlington	Farmington NM 87499
E-mail:	Telephone: 505 326 9700

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name: Same as above	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:

Project/PO #: Misc Ground Water Sampl

Shipping Co.:

Tracking #:

Reporting state for compliance testing:

Are any samples NRC licensable material?

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	BTEX
Cozzens MW-1	3-15-04 1613	GW		2
Flora Vista MW-1	3-16-04 0908	GW		2
TRIP Blank	3-16-04 0920	GW		1

COPY

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

PLEASE PROVIDE SEPARATE REPORTS FOR EACH LOCATION, COZZENS/FLORA VISTA

RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	DATE TIME:
(NEE)	3-16-04 945	CHD	3/17/04 1000

Page Of

FRMQA021.12.03.06

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

Gregg Wurtz
Burlington Resources, Inc.
3401 E. 30th St. PO BOX 4289
Farmington, NM 87402-4289

March 26, 2004

Project ID: MISC. GW SAMPLING
ACZ Project ID: L44981

Gregg Wurtz:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 17, 2004. This project has been assigned to ACZ's project number, L44981. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 10.0. The enclosed results relate only to the samples received under L44981. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 26, 2004. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

26/Mar/04

Sue Barkey, Project Manager, has reviewed and approved this report in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Burlington Resources, Inc.

ACZ Project ID: ***L44981***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Burlington Resources, Inc.
Project ID: MISC. GW SAMPLING
Sample ID: COZZENS

ACZ Sample ID: ***L44981-01***
Date Sampled: *03/15/04 16:13*
Date Received: *03/17/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *03/25/04 6:40*
Analysis Date: *03/25/04 6:40*
Dilution Factor: *10*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2	9	J		ug/L	3	10
Ethylbenzene	000100-41-4	4	J		ug/L	2	10
m p Xylene	01330 20 7	40			ug/L	4	20
o Xylene	00095-47- 6		U		ug/L	2	10
Toluene	000108-88-3		U		ug/L	2	10

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	109.3		%	83	117

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Burlington Resources, Inc.
MISC. GW SAMPLING

ACZ Project ID: L44981
Date Received: 3/17/2004
Received By: coryd

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			Ö
2) Are the custody seals on the cooler intact?	Ö		
3) Are the custody seals on the sample containers intact?			Ö
4) Is there a Chain of Custody or other directive shipping papers present?	Ö		
5) Is the Chain of Custody complete?	Ö		
6) Is the Chain of Custody in agreement with the samples received?	Ö		
7) Is there enough sample for all requested analyses?	Ö		
8) Are all samples within holding times for requested analyses?	Ö		
9) Were all sample containers received intact?	Ö		
10) Are the temperature blanks present?	Ö		
11) Are the trip blanks (VOA and/or Cyanide) present?	Ö		
12) Are samples requiring no headspace, headspace free?	Ö		
13) Do the samples that require a Foreign Soils Permit have one?			Ö

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
ACZ		0.4	12

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte detected in daily blank
H	Analysis exceeded method hold time.
J	Analyte concentration detected at a value between MDL and PQL
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality contreol sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.
P	Analyte concentration differs from second detector by more than 40%.
E	Analyte concentration is estimated due to result exceeding calibration range.
M	Analyte concentration is estimated due to matrix interferences.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December, 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Organic analyses are reported on an "as received" basis.

WELL DEVELOPMENT AND SAMPLING LOG

Project No.:300031.0 Project Name: Cozzens Client: Burlington Resources
Location: Cozzens Well No: MW-2 Development **Sampling**
Project Manager MJN Date 6/21/04 Start Time 1700 Weather sunny 40s
Depth to Water 4.20 Depth to Product na Product Thickness na Measuring Point TOC
Water Column Height .2 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐
Bottom Valve Bailer **x** Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other_____

Gal/ft x ft of water	Water Volume in Well		**Gal**/oz to be removed
	Gallons	Ounces	
.2 x .16	.03		.09

Time (military)	pH (su)	SC (umhos/cm)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (oz)	Comments/ Flow rate
								not enough water to collect field data

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
									not enough water to collect field data

COMMENTS: There was no water in the well.

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-2 Sample Time 1705
Analysis: BTEX
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L46373

CHAIN of CUSTODY

Report to:

Name: Gregg Wurtz
Company: Burlington Resources
E-mail:

Address: 3401 EAST 30TH STREET
Farmington NM 87499
Telephone: 505 326 9700

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name: SAME
Company:
E-mail:

Address:
Telephone:

COPY

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:
Project/PO #: Misc Sampling
Shipping Co.:
Tracking #:
Reporting State for compliance testing:

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE	TIME	Matrix	# of Containers	BTEX
MW-3 Marcote	6/21/04	1430	GW	2	+
MW-2 Marcote	6/21/04	1510	GW	2	+
MW-1 Flora Vista	6/21/04	1555	GW	2	+
MW-1 Cozzens	6/21/04	1650	GW	2	+
MW-2 Cozzens	6/21/04	1705	GW	2	+
MW-1 Johnson Federal #4	6/22/04	1247	GW	2	+
Trip Blank	6/22/04	1300	G	1	+

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please provide seperate report for each location
1) Marcote
2) Flora Vista
3) Cozzens
4) Johnson Federal

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
D. Mees	6/22/1600		
			6-23-04
			1160

PAGE Of

FRMQA021.06.03.05

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

Gregg Wurtz
Burlington Resources, Inc.
3401 E. 30th St. PO BOX 4289
Farmington, NM 87402-4289

July 12, 2004

Project ID: MISC SAMPLING
ACZ Project ID: L46373

Gregg Wurtz:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 24, 2004. This project has been assigned to ACZ's project number, L46373. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 10.0. The enclosed results relate only to the samples received under L46373. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 12, 2004. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

12/Jul/04

Sue Barkey, Project Manager, has reviewed and approved this report in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: MISC SAMPLING
Sample ID: MW-2 COZZENS

ACZ Sample ID: ***L46373-02***
Date Sampled: *06/21/04 17:05*
Date Received: *06/24/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *06/29/04 23:45*
Analysis Date: *06/29/04 23:45*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2		U	*	ug/L	0.3	1
Ethylbenzene	000100-41-4		U		ug/L	0.2	1
m p Xylene	01330 20 7	0.7	J		ug/L	0.4	2
o Xylene	00095-47- 6		U		ug/L	0.2	1
Toluene	000108-88-3	0.3	J		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	103.1		%	83	117

** Please refer to Extended Qualifier Report for details.*

Burlington Resources, Inc.
Project ID: MISC SAMPLING
Sample ID: MW-1 COZZENS

ACZ Sample ID: ***L46373-01***
Date Sampled: *06/21/04 16:50*
Date Received: *06/24/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *07/01/04 22:02*
Analysis Date: *07/01/04 22:02*
Dilution Factor: *20*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2		U		ug/L	6	20
Ethylbenzene	000100-41-4		U		ug/L	4	20
m p Xylene	01330 20 7	20	J		ug/L	8	40
o Xylene	00095-47- 6		U		ug/L	4	20
Toluene	000108-88-3		U		ug/L	4	20

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	109.3		%	83	117

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte detected in daily blank
H	Analysis exceeded method hold time.
J	Analyte concentration detected at a value between MDL and PQL
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality contreol sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.
P	Analyte concentration differs from second detector by more than 40%.
E	Analyte concentration is estimated due to result exceeding calibration range.
M	Analyte concentration is estimated due to matrix interferences.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December, 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Organic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Burlington Resources, Inc.

ACZ Project ID: ***L46373***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L46373-02	WG174234	Benzene	M8021B GC/PID	RA	Relative Percent Difference (RPD) exceeded limit; sample concentrations are less than 10x the MDL.
			M8021B GC/PID	V8	Calibration verification recovery was below the method control limit for this analyte, however the average % difference or % drift for all the analytes met method criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Burlington Resources, Inc.
MISC SAMPLING

ACZ Project ID: L46373
Date Received: 6/24/2004
Received By:

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?	X		
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?	X		
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
ACZ		1.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Burlington Resources, Inc.
MISC SAMPLING

ACZ Project ID: L46373
Date Received: 6/24/2004
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	Y < 2	YG< 2	B < 2	BG< 2	O < 2	T >12	P >12	N/A	RAD
L46373-01	MW-1 COZZENS										Ö	
L46373-02	MW-2 COZZENS										Ö	

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 3
B	Filtered/Sulfuric	BLUE	pH must be < 2
BG	Filtered/Sulfuric	BLUE GLASS	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 3003.00 Project Name: Cozzens Client: Burlington
Location: Well No: MW-1 Development **Sampling**
Project Manager MJN Date 9/29/04 Start Time 1727 Weather cloudy 60s
Depth to Water 3.15 Depth to Product na Product Thickness: na Measuring Point TOC
Water Column Height 9.95 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer Double Check Valv☐Bailer Stainless-Steel Kemr☐rer

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other or bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Gal/**oz** to be removed
11.7 x 0.16	1.87		5.62

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal)	Comments/ Flow rate
1732	**5.85**	**1020**	**67.0**				**0.25**	**clear**
	5.99	**1010**	**66.4**				**0.5**	**clear**
	6.08	**1030**	**66.9**				**0.75**	**clear**
	6.13	**1030**	**67.2**				**4.75**	**clear**
	6.08	**1010**	**67.0**				**5.0**	**clear**
1750	**6.09**	**1030**	**66.9**				**5.75**	**clear**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Vol Evac.	Comments/Flow Rate
1750	**6.09**	**1030**	**66.9**				**5.75**	**clear**

COMMENTS: Pump depleting well

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-1 Sample Time 1800
Analysis: **BTEX**
MS/MSD _____ BD _____ BD Name/Time _____ TB tb092104-01

Burlington Resources, Inc.
Project ID:
Sample ID: MW-1 COZZENS
Locator:

ACZ Sample ID: ***L48066-04***
Date Sampled: *09/29/04 18:00*
Date Received: *10/01/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *10/06/04 17:25*
Analysis Date: *10/06/04 17:25*
Dilution Factor: *10*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2		U		ug/L	3	10
Ethylbenzene	000100-41-4		U	*	ug/L	2	10
m p Xylene	01330 20 7	5	J	*	ug/L	4	20
o Xylene	00095-47- 6		U		ug/L	2	10
Toluene	000108-88-3	4	J		ug/L	2	10

Surrogate Recoveries

Surrogate	CAS	%Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	97.1		%	83	117

** Please refer to Extended Qualifier Report for details.*

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 300031.0 Project Name: Cozzens Client: Burlington Resources
Location: Cozzens Well No: MW-2 Development **Sampling**
Project Manager MJN Date 9/29/04 Start Time 1803 Weather cloudy 60s
Depth to Water 3.34 Depth to Product na Product Thickness na Measuring Point TOC
Water Column Height 1.06 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐
Bottom Valve Bailer **x** Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other_____

Gal/ft x ft of water	Water Volume in Well		**Ounces** to be removed
	Gallons	Ounces	
1.06 x .16	.17	21.71	65.13

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (oz)	Comments/ Flow rate
1805	**3.83**	**1730**	**65.0**				**20**	**clear**
1807	**4.96**	**2140**	**66.5**				**28**	**well is dry**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Vol Evac.	Comments/Flow Rate
1807	**4.96**	**2140**	**66.5**				**28**	**well is dry**

COMMENTS:

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-2 Sample Time 1815
Analysis: BTEX
MS/MSD_____ BD_____ BD Name/Time_____ TB tb092104-01

Burlington Resources, Inc.
Project ID:
Sample ID: MW-2 COZZENS
Locator:

ACZ Sample ID: ***L48066-05***
Date Sampled: *09/29/04 18:15*
Date Received: *10/01/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *10/06/04 18:08*
Analysis Date: *10/06/04 18:08*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2	0.3	J		ug/L	0.3	1
Ethylbenzene	000100-41-4	4.2		*	ug/L	0.2	1
m p Xylene	01330 20 7	7.4		*	ug/L	0.4	2
o Xylene	00095-47- 6	13.6			ug/L	0.2	1
Toluene	000108-88-3	14.9			ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	95.2		%	83	117

** Please refer to Extended Qualifier Report for details.*

WELL DEVELOPMENT AND SAMPLING LOG

Project No.:_____ Project Name: Cozzens Client: Burlington
Location: Well No: MW-1 Development **Sampling**
Project Manager MJN Date 9/21/04 Start Time 1637 Weather clear 80s
Depth to Water 4.90 Depth to Product na Product Thickness: na Measuring Point TOC
Water Column Height 9.95 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer Double Check Valv☐Bailer Stainless-Steel Kemr☐rer

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other or bail dry

Gal/ft x ft of water	Water Volume in Well		Gal/**oz** to be removed
	Gallons	Ounces	
9.95 x 0.16	1.62		4.86

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal)	Comments/ Flow rate
1637	**6.18**	**1020**	**76.5**				**.25**	**clear**
	6.20	**990**	**70.1**				**.5**	**clear**
	6.18	**940**	**67.2**				**.75**	**clear**
	6.38	**920**	**65.7**				**4.25**	**clear**
	6.12	**910**	**65.2**				**4.5**	**clear**
	6.18	**920**	**65.4**				**4.75**	**clear**
1648	**6.14**	**910**	**65.8**				**5.0**	**clear**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
1648	**6.14**	**910**	**65.8**					**5.0**	**clear**

COMMENTS: Pump depleting well

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-1 Sample Time 1650
Analysis: **BTEX**
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

Burlington Resources, Inc.
Project ID:
Sample ID: MW-2 COZZENS
Locator:

ACZ Sample ID: ***L48066-05***
Date Sampled: *09/29/04 18:15*
Date Received: *10/01/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *10/06/04 18:08*
Analysis Date: *10/06/04 18:08*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2	0.3	J		ug/L	0.3	1
Ethylbenzene	000100-41-4	4.2		*	ug/L	0.2	1
m p Xylene	01330 20 7	7.4		*	ug/L	0.4	2
o Xylene	00095-47- 6	13.6			ug/L	0.2	1
Toluene	000108-88-3	14.9			ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	95.2		%	83	117

** Please refer to Extended Qualifier Report for details.*

GAS RECOVERY FUND APPLICATION

This information is required to be filled out and submitted to the Gas Recovery coordinator. The Gas Recovery team will then allocate funds if project meets qualifications. Also included is our partner information which must be completed. Local EH&S or project engineers will be able to help in filling out this application. See attached estimating spread sheet.

Type Of Application		
Engineering study: Yes / No / Type	Yes	Flow Controller Logic Pilot Study
Equipment Purchase: Yes / No / Type	Yes	Field measurement flow meters
Contact / Facility Information		
Division	San Juan	
Name of applicant	Christy McMullan/Neale Roberts	
Contact Number	(505) 324-6163	
E-Mail Address	cmcmullan@br-inc.com	
Name of Facility		
Facility Location	San Juan / La Plata County	
Approximate age of facility	2- 15 years	
Operating Division	San Juan Division	
State / Province	New Mexico / Colorado	
Country	United States	
Field	San Juan Basin	
Estimated Life expectancy of well / facility	10 yr minimum	
Hydrocarbon Liquids Production bbl/day	N/A	
Gas Production mscf/day	N/A	
Economic Summary		
See attached spread sheet		
Partner (s) Information		
Company and contact name	Various	
Number		
%working interst		
Company and contact name	Varoius	
Number		
%working interst		
Other criteria, which will effect decision		
Close proximity to residence - distance	Site specific	
Close proximity to schools – distance	Site specific	
Close proximity to other – specify type and distance	Site specific	
Odor complaints	Odor Reduction	
Regulatory issues	Emisions Reduction	
Safety considerations	Venting Gas Reduction	
Other		

Ralph Wieler
Gas Recovery EH&S Coordinator
Fax 713-624-5272
E-mail: rwieler@br-inc.ca
Ph: 713-624-9508

Gas Recovery Ecomomics Spreadsheet

Highlighted boxes are required entries unless otherwise indicated

CALCULATION ASSUMPTIONS

0%	Year 2 Decline Rate (% of Year 1 Production)	2005	Starting Year
0%	Year 3 Decline Rate (% of Year 1 Production)	0%	Year 4+ Decline Rate
$ 4.50	Current Market Gas Price ($/MMBTU)*	$46,600	Equipment Cost
$ 4.00	*BR internal investment Gas Base ($/MMBTU)***	$53,400	*Shipping, Installation Cost*
$ 76.00	Expected Gas Rate (MCFD)	$0	Annual Maintenance Cost
62%	Net Revenue Interest (NRI)	$100,000	Total Cost
75%	Working Interest (WI)	$75,000	Total Net Cost
*use current market rate		1100	BTU of Recovered Gas (BTU/scf)
** current investment price deck, adjusted for differential			

INVESTMENT ANALYSIS

Investment Case Purchase Analysis

Recovered Gas Volume (Mcfd)	Monthly Revenue ($/Mnth)	Capital Pay Out (Years)
10	829.86	7.5
20	1659.72	3.8
30	2489.57	2.5
40	3319.43	1.9
50	4149.29	1.5
60	4979.15	1.3
70	5809.00	1.1
80	6638.86	0.9
90	7468.72	0.8
100	8298.58	0.8
110	9128.43	0.7
120	9958.29	0.6
130	10788.15	0.6
140	11618.01	0.5
150	12447.86	0.5
160	13277.72	0.5
170	14107.58	0.4
180	14937.44	0.4

Location of facility	
Application date	3/30/2005
Name of applicant	Christy McMullan/Neale Roberts

Investment Summary

$ 46,600.00	Purchase Cost of unit
$ 53,400.00	Estimated Shipping, Installation Cost
$ -	*see below explanation for cost
$0	*Annual Maintenance Cost*
$ 100,000.00	Total Cost of equipment
$ 75,683.01	Annual Gross Revenue
$ (24,316.99)	**First Year Net Profit**
$ 51,366.03	**2 Year Net Profit**
$ (0.32)	**Profit / Investment Ratio 1st yr**
$ 0.68	**P/I Ratio for 2yrs**
362	Days Until Payout
*Enter cost of flare and permit if it is an alternate option.	

Potential Earnings Summary

$ 46,600.00	Purchase Cost of unit
$ 53,400.00	Estimated Shipping, Installation Cost
$ -	*see below explanation for cost
$0	Annual Maintenance Cost
$ 100,000.00	Total Cost of equipment
$ 85,143.39	Annual Gross Revenue
$ (14,856.61)	**First Year Net Profit**
$ 70,286.78	**2 Year Net Profit**
$ (0.20)	**Profit / Investment Ratio 1st yr**
$ 0.94	**P/I Ratio for 2yrs**
322	Days Until Payout
*Enter cost of flare and permit if it is an alternate option.	

1 Year Rental Analysis (invest.)

Gross Rental Cost for one year (est.)	$ -
*see below for cost explanation	$ -
Total Cost	$ -
Annual Gas sales	$ -
Year 1 rental (cost) / profit	$ -
*Subtract cost of flare and permit if it is an alternate option.	

Additional Calculation Assumptions (describe here)

S:_EH\NM\[illegible] Gas Recovery Program\[illegible] Gas Re[illegible] App Economics_flow controller logic [illegible].xls]Project Economics

Starting Year	2005	Net Annual Operation Cost	$12,000.00
WI	75.00%	Net Capital Cost	$75,000.00
NRI	62.00%	Initial Gas Volume (MCFD)	0.00
Realized price	$4.00		

Year	8/8 Volume, mcfd	Net Revenue	Net Op Cost	Net Capital	Net Cash Flow	Cum Net Cash Flow	Discounted Net Cash Flow
2005	0	$0	$0	$75,000	-$75,000	-$75,000	-$71,510
2006	0	$0	$0		$0	-$75,000	$0
2007	0	$0	$0		$0	-$75,000	$0
2008	0	$0	$0		$0	-$75,000	$0
2009	0	$0	$0		$0	-$75,000	$0
2010	0	$0	$0		$0	-$75,000	$0
2011	0	$0	$0		$0	-$75,000	$0
2012	0	$0	$0		$0	-$75,000	$0
2013	0	$0	$0		$0	-$75,000	$0
2014	0	$0	$0		$0	-$75,000	$0
2015	0	$0	$0		$0	-$75,000	$0
2016	0	$0	$0		$0	-$75,000	$0
2017	0	$0	$0		$0	-$75,000	$0
2018	0	$0	$0		$0	-$75,000	$0
2019	0	$0	$0		$0	-$75,000	$0
2020	0	$0	$0		$0	-$75,000	$0
2021	0	$0	$0		$0	-$75,000	$0
2022	0	$0	$0		$0	-$75,000	$0
2023	0	$0	$0		$0	-$75,000	$0
2024	0	$0	$0		$0	-$75,000	$0
2025	0	$0	$0		$0	-$75,000	$0
2026	0	$0	$0		$0	-$75,000	$0
2027	0	$0	$0		$0	-$75,000	$0
2028	0	$0	$0		$0	-$75,000	$0
2029	0	$0	$0		$0	-$75,000	$0
2030	0	$0	$0		$0	-$75,000	$0
	0	$0	$0	$75,000	-$75,000	-$75,000	-$71,510

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 3003.00 Project Name: Cozzens Client: Burlington
Location: Cozzens Well No: MW-1 Development **Sampling**
Project Manager MJN Date 12/13/04 Start Time 1522 Weather clear 30s
Depth to Water 5.60 Depth to Product na Product Thickness: na Measuring Point TOC
Water Column Height 9.25 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer Double Check Valve Bailer Stainless-Steel Kemmerer

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other or bail dry

Gal/ft x ft of water	Water Volume in Well		**Gal/oz to be removed**
	Gallons	Ounces	
9.25 x 0.16	1.48 x 3		4.44

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal)	Comments/ Flow rate
1522	**7.70**	**1490**	**54.4**				**.25**	
	7.49	**1440**	**53.3**				**.50**	
	7.64	**1430**	**52.8**				**2.5**	
	7.44	**1450**	**52.8**				**4.5**	
1536	**7.55**	**1450**	**52.8**				**5.0**	

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Vol Evac.	Comments/Flow Rate
1536	**7.55**	**1450**	**52.8**				**5.0**	

COMMENTS: Pump depleting well

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**
DO Monitor _____ Other _____
Conductivity Meter **X** _____
Water Disposal onsite Sample ID MW-1 Sample Time 1540
Analysis: **BTEX**
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: MISC GW SAMPLES
Sample ID: COZZENS MW 1
Locator:

ACZ Sample ID: ***L49178-01***
Date Sampled: *12/13/04 15:40*
Date Received: *12/15/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *12/21/04 11:09*
Analysis Date: *12/21/04 11:09*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2		U		ug/L	0.3	1
Ethylbenzene	000100-41-4	10.2			ug/L	0.2	1
m p Xylene	01330 20 7	24.1			ug/L	0.4	2
o Xylene	00095-47- 6	6.8			ug/L	0.2	1
Toluene	000108-88-3		U		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	85.6		%	83	117

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 300031.0 Project Name: Cozzens Client: Burlington Resources
Location: Cozzens Well No: MW-2 Development **Sampling**
Project Manager MJN Date 12/13/04 Start Time 1549 Weather clear 30s
Depth to Water 3.95 Depth to Product na Product Thickness na Measuring Point TOC
Water Column Height .45 Well Dia. 2"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐
Bottom Valve Bailer x Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal X stabilization of Indicator Parameters X Other_____

	Water Volume in Well		
Gal/ft x ft of water	Gallons	Ounces	**Ounces** to be removed
.45 x .16	.072 x 3	9.216 x 3	27.65

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (oz)	Comments/ Flow rate
1549	**7.10**	**1310**	**54.9**				**6**	**Well has bailed dry**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Vol Evac.	Comments/Flow Rate
1549	**7.10**	**1310**	**54.9**				**6**	**Well has bailed dry**

COMMENTS:

INSTRUMENTATION: pH Meter X _____ Temperature Meter x
DO Monitor _____ Other _____
Conductivity Meter X _____
Water Disposal onsite Sample ID MW-2 Sample Time 1555
Analysis: BTEX
MS/MSD_____ BD_____ BD Name/Time_____ TB_____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: MISC GW SAMPLES
Sample ID: COZZENS MW 2
Locator:

ACZ Sample ID: ***L49178-02***
Date Sampled: *12/13/04 15:55*
Date Received: *12/15/04*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *12/21/04 11:53*
Analysis Date: *12/21/04 11:53*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	XQ	Units	MDL	PQL
Benzene	000071-43-2	0.7	J		ug/L	0.3	1
Ethylbenzene	000100-41-4	3.8			ug/L	0.2	1
m p Xylene	01330 20 7	8.4			ug/L	0.4	2
o Xylene	00095-47- 6	2.2			ug/L	0.2	1
Toluene	000108-88-3		U		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	XQ	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	99.8		%	83	117

COPY ~~L49153~~ RMG 12/17/04 L49178

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Gregg Wurtz
Company: Burlington
E-mail:
Address: 3401 30TH ST
FARMINGTON NM 87499
Telephone: 505 326 9700

Copy of Report to:

Name:
Company:
E-mail:
Telephone:

Invoice to:

Name: SAME AS Above
Company:
Email:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:
Project/PO #: Misc. Groundwater Sampl
Reporting state for compliance testing:
Are any samples NRC licensable material?

ANALYSES REQUESTED (attach list or use quote number)

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	BTEX							
	Marcotte MW2	121304 0925	GW	2	✓							
	Marcotte MW1	121304 0950	GW	2	✓							
	Marcotte MW3	121304 1010	GW	2	✓							
1.	Cozzens MW1	121304 1540	GW	2	✓							
2.	Cozzens MW2	121304 1555	GW	2	✓							
	FloraVista MW1	121304 1607	GW	2	✓							
	TB 12-0904-01	121304 1730	O	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

PLEASE PROVIDE SEPARATE REPORT FOR EACH LOCATION

Please refer to ACZ's terms & conditions located on the reverse side of this COC

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
~~D~~ (NEE)	12-13-04 2015	Rebecca Harvey	12/15/04 1000

SAMPLED BY: Martin Nee as per Greg Wurtz RMG 12/15/04

INTERNAL USE ONLY

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 30, 2004

Report to:
Gregg Wurtz
Burlington Resources, Inc.
3401 E. 30th St. PO BOX 4289
Farmington, NM 87499

Bill to:
Gregg Wurtz
Burlington Resources, Inc.
3401 E. 30th St. PO BOX 4289
Farmington, NM 87499

Project ID: MISC GW SAMPLES
ACZ Project ID: L49178

Gregg Wurtz:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 15, 2004. This project has been assigned to ACZ's project number, L49178. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 11.0. The enclosed results relate only to the samples received under L49178. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 30, 2005. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

30/Dec/04

Sue Barkey, Project Manager, has reviewed and approved this report in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte detected in daily blank
H	Analysis exceeded method hold time.
J	Analyte concentration detected at a value between MDL and PQL
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality contreol sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.
P	Analyte concentration differs from second detector by more than 40%.
E	Analyte concentration is estimated due to result exceeding calibration range.
M	Analyte concentration is estimated due to matrix interferences.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December, 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Organic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Burlington Resources, Inc.

ACZ Project ID: ***L49178***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Burlington Resources, Inc.
MISC GW SAMPLES

ACZ Project ID: L49178
Date Received: 12/15/2004
Received By:

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?		X	
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?	X		
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

"Sampled by" not relinqished

Contact (For any discrepancies, the client must be contacted)

Gregg Wurtz was contacted. Gregg indicated who did the sampling.

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
acz		8.5	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Burlington Resources, Inc.
MISC GW SAMPLES

ACZ Project ID: L49178
Date Received: 12/15/2004
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	Y < 2	YG< 2	B < 2	BG< 2	O < 2	T >12	P >12	N/A	RAD
L49178-01	COZZENS MW 1										X	
L49178-02	COZZENS MW 2										X	

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BG	Filtered/Sulfuric	BLUE GLASS	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

DRILLING LOGS/WELLBORE DIAGRAMS

RECORD OF SUBSURFACE EXPLORATION

Borehole # 1
Well # MW-1
Page 1 of 1

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2282 FAX (505) 326-2388

Project Name
Project Number 21077 Phase 500 99
Project Location Cozzens (Mesa Montana)

Elevation
Borehole Location Cozzens (Mesa Montana)
GWL Depth 3'
Logged By D. Cheney
Drilled By K. Padilla
Date/Time Started 5/19 0800
Date/Time Completed 5/19 1010

Well Logged By D. Cheney
Personnel On-Site Cheney, K. Padilla, M. Padilla
Contractors On-Site
Client Personnel On-Site Ed Hasely

Drilling Method 4 1/4" HSA
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0			Fill to approx 15' (Ed Hasely 5/19). No sample at 5-7'						
5	5		Brown, medium to coarse grained poorly sorted sand w/pea gravel, wet at 3', black staining at 5', no odor			0.1		7.6	BC = 8 S/1ft = 3.6
10	10		yellowish brown silty clay, low plasticity, hard			0.5		0.0	BC = 50 (10") S/1ft = 4.6
15	12		TD = 13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface						
20									
25									
30									
35									
40									

Comments: Materials 1 silt trap, 1-10' screen 1-5' riser 6 sacks silica sand, 2 sacks bentonite

Geologist Signature D. Cheney

RECORD OF SUBSURFACE EXPLORATION

Cozzens B# 1

Borehole # 2
Well # MW-2
Page 1 of 1

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Project Name
Project Number 2173 Phase 800.99
Project Location Cozzens / Mesa Montana

Elevation
Borehole Location
GWL Depth 2'
Logged By P. Cheney
Drilled By P. Cheney
Date/Time Started
Date/Time Completed

Well Logged By P. Cheney
Personnel On-Site Cheney, E. Padilla, O. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Hensley

Drilling Method Hand Auger
Air Monitoring Method PID

Depth (Feet)		Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0				Hand auger to 3' through sand, cobbles and gravel. Auger refusal at 3'. Set 2' of screen from 3' to 1', sand to approx 0.5', bentonite to surface						
5										
10										
15										
20										
25										
30										
35										
40										

Comments:

Geologist Signature Paul Cheney

NITORING WELL INSTALLATION RECORD

Environmental Services Corp.
Monroe Road
ton, New Mexico 87401
326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-1
Page 1 of 1

Project Name

Project Number 2173 Phase 1000.91
Project Location Citizens (Mesa Montana)

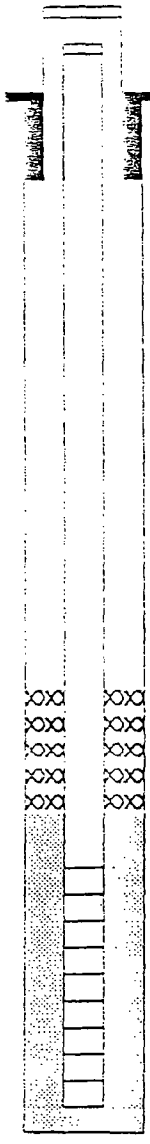
ation
Location Citizens
Depth 13'
lled By R. Padilla

Time Started 5/19 0800
Time Completed 5/19 1015

On-Site Geologist C. Cheney
Personnel On-Site C. Cheney, R. Padilla, K. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Riesely

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		N.A.
Bottom of Concrete		N.A.
Top of Grout		N.A.
Bottom of Grout		N.A.
Top of Well Riser		2' (+)
Bottom of Well Riser		3'
Top of Well Screen		3'
Bottom of Well Screen		13'
Top of Peltonite Seal		Ground Surface
Bottom of Peltonite Seal		1'
Top of Gravel Pack		1'
Bottom of Gravel Pack		13'
Top of Natural Cave-In		N.A.
Bottom of Natural Cave-In		N.A.
Top of Groundwater		3'
Total Depth of Borehole		13'



Top of Protective Casing
Top of Riser 2'
Ground Surface
Top of Seal Ground surface
Top of Gravel Pack 1'
Top of Screen 3'
Bottom of Screen 13'
Bottom of Borehole 13'

Comments: TD = 13'. Installed 2" screen from 13' to 3', sand to 1', bentonite to surface

Geologist Signature

PHILIP REPORT ON EXCAVATION
DATED 1/8/98

PHILIP SERVICES
CORP.

Industrial Services Group
Central Region

January 8, 1998 Project 19914

Mr. Ed Hasely
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020. and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted,
PHILIP SERVICES CORPORATION

Robert Thompson
Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	19	ug/kg	2	ug/kg
Toluene	55	ug/kg	2	ug/kg
Ethylbenzene	95	ug/kg	2	ug/kg
m,p-Xylene	497	ug/kg	2	ug/kg
o-Xylene	13	ug/kg	2	ug/kg
TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/kg	2	ug/kg
Toluene	43	ug/kg	2	ug/kg
Ethylbenzene	133	ug/kg	2	ug/kg
m,p-Xylene	508	ug/kg	2	ug/kg
o-Xylene	16	ug/kg	2	ug/kg
TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by: *Date:* 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD
Surrogate QC No.: 0556-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	60.0	62.1	3	15%
Toluene	ppb	60.0	63.3	5	15%
Ethylbenzene	ppb	60.0	62.0	3	15%
m,p-Xylene	ppb	120.0	120.9	1	15%
o-Xylene	ppb	60.0	62.1	3	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84				
17063-G3688	84				
				12/15/97	12/11/97

S1: Flourobenzene

PHILIP

Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No. G 3688

Project Name	Burlington Res Cozzen B-1	Lab	Name	ONSITE
Project Number	Phase . Task 1000 . 77		Location	Farmington
Samplers	David Brown			

Sample Number	Date	Time	Matrix	Analysis Type: TPH	BTX			Comments
Cozzen - 01	12-9-97	12:10		X	X			7062 - G3688
Cozzen - 02	12-9-97	12:12		X	X			7063 - ↓

Relinquished by:

Signature	Date	Time
David Brown	12-9-97	14:25

Received By:

Signature	Date	Time
Craig D. Stanley	12/9/97	14:30

Carrier: Airbill No.

Shipping and Lab Notes:

Robert 326-2262 - Philip Services

PE-211 (4/95)